VACATION NOTES.

II. The Northern Pacific Coast.

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The traveler journeying by rail from northern California into Oregon soon finds himself in a very different country from that which he has left to the south. On emerging from the densely wooded canyon of the upper Sacramento, the railroad climbs up to a nearly level plateau, from which rises the great cone of Shasta. The plain is almost destitute of trees, and presents much the appearance of the prairies east of the Rockies. The slopes of the mountains are well wooded, and the deep valleys between the ridges support a heavy growth of timber. The railway skirts the base of Shasta for several hours, and affords admirable views of the mountain from nearly all sides. Finally the Siskiyou Mountains, the boundary between California and Oregon, are surmounted, and the train descends rapidly into the fertile, well-watered valleys of Oregon. Flourishing fields of grass and clover, and apple orchards remind one of the eastern states, and replace the vineyards and prune orchards, or the fields of alfalfa, of central California.

Following the great Willamette valley, we finally reach Portland, and a few more hours bring us to Tacoma, whence our steamer sails for Alaska. Before Portland is reached, the great Douglas fir begins to predominate in the forest, and about Puget Sound often almost entirely makes up large tracts of forest. Here, too, it reaches its greatest dimensions, it being claimed that about the base of Mt. Rainier there are trees over 400 feet in height. As this is the staple timber tree of the northwest, most of the trees have been cut away from near the settlements, and one must go some distance away to find the virgin forest. This tree, fortunately, like many other western conifers, grows up quickly after the forest has been cut

over, and is rapidly taking possession of the cleared ground, where this has been left for a short time, so that the renewal of this most valuable timber ought not to be a difficult problem, and with little care a supply of timber could be maintained. The heavy rainfall and moderate climate of the coast region induces a very rapid reforesting of the cut-over tracts, which very soon become dense thickets of vigorous young trees.

Two days were spent very pleasantly in Tacoma, which is most attractively placed on the high shore of Puget Sound, with a magnificent view of the Cascade Mountains, and Mt. Rainier, the grandest of all the great snow peaks south of Alaska — indeed, to me it is the finest mountain I have ever seen. The rugged cone, recalling in form that of the Jungfrau, is even more imposing than Shasta, and being seen from the level of the sea, it loses nothing of its 14,000 feet of height.

The luxuriant growth of all kinds of vegetation about Tacoma testifies to the heavy rainfall of this region, and during my stay, both going to and returning from Alaska, rain fell much of the time. In spite of the rain, however, several trips were made in the neighborhood, which is very attractive.

The character of the country about Tacoma varies remarkably within a short distance. To the south are open regions, recalling the oak openings of northern Illinois or southwestern Michigan. The dry ground is covered with a thin growth of grasses or low thickets of ferns, brambles, and other low shrubs, with here and there clumps of scrub oaks — probably *Quercus lobata* — and a few stunted firs. The showiest flower of this region was a handsome small turk's-cap lily, with orange-red, spotted flowers. The common bearberry, *Arctostaphylos uva-ursi*, was common, the spreading mats of glossy green foliage being extremely ornamental.

The site of the town itself was formerly covered by a dense fir forest, remains of which may still be seen in the outskirts. When I arrived, in mid-June, the gardens were beautiful with the early summer flowers. Superb roses grew in the most luxuriant profusion, and were in their prime. I was told that a few weeks earlier the rhododendrons had been equally fine.

The most attractive place in the neighborhood is Point Defiance Park, a government reservation which is open as a public park. It is a magnificent tract of forest, on the shore of the Sound, which has been preserved, and is of course especially interesting to the botanist, as it gives an excellent idea of the character of the forest which formerly covered the whole of the surrounding country. The trees are for the most part the prevailing Douglas fir, and while these do not grow so thickly as in the best lumber regions, still the individual trees are magnificent specimens. Some of them must be 250 feet high, with immensely tall trunks eight feet or more in diameter near the ground. These straight columns run up to a prodigious height without branches, and one only realized the great size of the trunks on coming close to them, as their enormous height gives them a deceptively slender appearance. I was told that these trees were not to be compared to some of those further inland, but they were the finest specimens of the species that I have ever seen.

A few cedars and hemlocks were mixed with the firs, but neither were of remarkable size, although at Vancouver I remember seeing cedars of gigantic size. The undergrowth of the forest was much like that in northern California. The commonest of the deciduous trees noted were *Acer macrophyllum*, *Cornus nuttallii*, and *Alnus oregana*. The excessive moisture causes an extraordinarily rank growth of ferns and undershrubs, almost tropical in its luxuriance. *Pteris aquilina* grew everywhere, some of the fronds being ten feet or more in height, and *Rubus nutkanus*, growing with them, was almost as high. In the low grounds *Equisetum maximum*, five or six feet high, was conspicuous. A few specimens of Linnæa were seen, and another characteristic plant was *Gaultheria shallon*, in full flower. It forms a prostrate bush a foot or two in height, a veritable giant compared to the eastern wintergreen.

At Tacoma I had the good fortune to meet Mr. Walter Evans, of the Department of Agriculture, who was also bound for Alaska. I am much indebted to him for information concerning the flora of the Northern Pacific Coast, with which his former trips had made him familiar.

The voyage to Alaska from Puget Sound is a most attractive one, and during the brief summer season is yearly drawing a larger number of tourists. Last summer, however, the majority of the north-bound passengers were drawn by other attractions than the charms of the scenery, and our passenger list was made up largely of persons bound for Skaguay and Dyea, *en route* for the Klondike.

The route follows the channels between the numberless islands off the coast of British Columbia and Alaska, and at no time do the steamers enter the open sea. Often the channel is so narrow that one could almost throw a stone ashore, and it is hard to realize that one is not sailing through a lake, or even a river, as there is no trace of the ocean swell nor heavy waves, except at one or two points where, for a short distance, there is a break in the barrier of islands protecting the inland channel.

Everywhere the shores are heavily wooded to the water's edge — indeed, the whole coast from Puget Sound to Sitka is covered with an almost unbroken forest, where the trees stand so close together that the dead trees are held upright by their living companions. These bleached skeletons, seen everywhere in the forest, give to it a very peculiar aspect.

Above the timber line the rugged tops of the mountains project, with here and there masses of snow, which become larger and more numerous as we go northward, and come down until they meet the forest. From the steep mountain sides little streams rush down in a series of cascades, which finally fall into the sea.

As we proceed northward the scenery grows more and more striking. The mountains become higher and more rugged, and the summits are completely covered with perpetual snow and ice, and the snow-line descends farther and farther, until finally we reach a land of glaciers, many of which come down to the sea. The wonderful panorama of snow-clad, glacier-sculptured mountains reaches its climax on the last day of the voyage, passing through Lynn channel after leaving Skaguay, the most northerly point visited. Here the mountains rise abruptly from the water to a height of 8000 feet and more,

and from them the great glaciers flow down, sometimes reaching the sea, where the great fragments broken off float off as icebergs. None of the ice masses seen were of very large size, but their fantastic shapes, and the exquisite hues of the pure ice, presented a beautiful spectacle. At this high latitude, at the end of June, the sun did not set until nearly ten o'clock, and it did not become really dark at all, so that we had to go to bed by daylight — a novel experience for most of us.

Stops were made at Wrangell, where there were standing a number of the curious totem poles, which unfortunately have since been burned. Stops were also made at Juneau and Skaguay, the latter a most unattractive collection of shabby huts, raised on piles to keep them out of the water. Near by was the rival town of Dyea, which we did not visit.

The vegetation is everywhere luxuriant, showing the heavy rainfall and relatively mild climate of the coast. The variety of plants, however, is not very great, and as our stops were not of long duration, the opportunities for botanizing were somewhat limited, and no plants were seen which were not also found later at Sitka.

Sitka offers many attractions to the tourist, being most beautifully placed on Baranoff Island, one of the largest of the innumerable islands making up the Alaskan archipelago. Evidences of the Russian occupation are seen on all sides, nearly all the buildings in the little town dating back to the period when this was Russian territory. The massive buildings of hewn logs, with steep moss-covered roofs, and the Greek church lifting its turnip-shaped green cupolas above the other buildings at the head of the main street, give the town a very foreign air, which is not lessened when we find how many of the Russians still remain. The bulk of the population is still made up of the Russians and the native Indians, whose quarter, facing the harbor, presents a picturesque medley of big dug-out canoes, and frames for drying fish, among which are snarling and fighting a rabble of wolfish dogs, which seem to be a necessary adjunct of every self-respecting family of Alaskan Indians.

The harbor is surrounded by mountains on which the snow lies for most of the year, and there are numerous wooded islands

scattered over it which add much to its beauty. The country about Sitka shows a good deal of variety of surface and elevation, and the flora for so northerly a region is decidedly rich. A good road following the harbor for some distance, and several trails, make it easy to get about in the neighborhood of the town itself. The favorite walk is along the beautiful Indian river, which is crossed by a suspension bridge, and along which are most attractive paths through the forest.

The predominant tree of the Alaska forest is the tide-land spruce (*Picea sitchensis*), which forms extensive forests everywhere along the coast south of Sitka. About Sitka the tree reaches a large size, some trunks measured being upwards of twenty-five feet in circumference at about five feet above the ground, and these trees were at least 150 feet high. Like the California redwood, the tree is very tenacious of life and sprouts freely from the stump, as well as springing up quickly from seed, so that when this forest is cut over there soon grows up a dense thicket of young trees. Many trees have the base of the trunk much swollen, and sometimes with a space between the roots, so that the tree is raised, as it were, on stilt-like props. The origin of these peculiar structures is found in the frequent sprouting of the seeds on old stumps or prostrate trunks. These resist decay for many years, and trees of very considerable size are often met with, perched astride of the old fallen trunks, and sending down large roots which finally reach the earth. When the old trunk at last decays, the young tree is left supported by a hollow arch of roots, which often never becomes entirely filled up by subsequent growth.

In the more remote regions two species of cedar (*Thuja plicata* and *Chamæcyparis nutkænsis*) are found, but about Sitka most of the cedar has been cut, as it is in great demand for making the big dug-out canoes, as well as for other purposes. The northern hemlock (*Tsuga mertensiana*) is common about Sitka, and reaches a large size, although hardly equal in size to the spruce. It closely resembles the eastern hemlock, especially when young.

Owing to the excessive moisture, the ground in the forest, as well as every stump and fallen tree, is covered with a thick

carpet of beautiful mosses and liverworts, comprising numerous species. Various species of Hypnum are the commonest, but Polytrichum, Mnium, and others of the larger mosses were conspicuous. Of the Hepatics, the cosmopolitan *Pellia epiphylla* and *Conocephalus conicus* were the most abundant, but there were a number of others which were common. Lichens also were abundant and conspicuous.

The mossy carpet was brightened with many charming flowers, mostly common northern genera. Linnæa, *Smilacina bifolia*, *Cornus canadensis*, Moneses, and various Saxifragaceæ were abundant, and in addition to these were beautiful ferns and the glossy fern-like leaves of Coptis sp.? Most of these woodland flowers showed the white or pale pink color of so many of our vernal flowers, but there were a few of more vivid colors. The bright red and yellow columbine (*Aquilegia formosa*) was common, and a very handsome violet-purple iris, probably *I. sibirica*, was seen in some of the gardens, but was not met with growing wild, although it is said to be common in some parts of Alaska.

Along the edges of the forest and in the clearings were thickets of the salmon-berry, *Rubus speciosus*, whose crimson flowers and big showy orange and scarlet berries make it the handsomest of its tribe. The fruit is not unpalatable, but is far inferior in flavor to the ordinary red raspberry or the blackberry. They are highly prized by the natives, who preserve large quantities for winter use. Several other species of Rubus are common, as well as various Vacciniums and species of wild currants, all of which are important articles of food among the Indians.

Certain plants were noticed on some of the islands which were not seen about the town. Of these the most noteworthy were *Campanula rotundifolia*, which was very fine on one of the islands, popularly called "blue bell island"; *Rubus nutkanus* and *Fritillaria kamtschatcense* were also collected, the latter, however, past flower.

The low ground in the neighborhood of Sitka is largely covered with a growth of Sphagnum, and, as usual with peat bogs, harbors many interesting plants. In a small lake back of the

town were a number of aquatics, the most conspicuous of which was *Nuphar polysepalum*, with enormous yellow flowers and big leaves. In the Sphagnum grew Linnæa, cranberries, *Vaccinium vitis-idæa*, crowberry, *Drosera rotundifolia*, Menyanthes, and the closely related *Nephrophyllidium crista-galli*, cotton grass, *Kalmia glauca*, and other characteristic bog plants.

On the higher portions of the bog were small groves of *Pinus contorta*, the only pine seen in Alaska, and some small cedars (probably Chamæcyparis), which, not being in fruit, could not be positively identified.

The most conspicuous bog plant of this region is the western skunk-cabbage (*Lysichiton kamtschatcense*), which abounds everywhere along the Northern Pacific Coast, and is the only Aroid of this region. The enormous leaves, sometimes three feet in length and a foot wide, resemble some tropical plant, and recalled to me some of the great West Indian species of Anthurium. Indeed, both the leaves and the inflorescence, with its large, lemon-yellow spathe, recall Anthurium rather than Symplocarpus, with which it is ordinarily associated. The popular name is rather a libel on this very handsome Aroid, as the odor is not at all noticeable.

There are certain drawbacks in exploring the forest, which is so dense that it is not safe to leave the trails. A few feet away from the trail there is an almost impenetrable jungle, the ground covered with fallen logs and a tangle of dense undergrowth which makes one's progress toilsome in the extreme, and once out of sight of the trail the danger of losing one's self completely is very great. The appropriately named "devil's club" (*Echinopanax horridus*), a comely enough plant to look at, with its big, bright green maple-shaped leaves, but whose stem is covered with bunches of needle-like spines, abounds everywhere, and is the veritable terror of these northern woods.

In the more open ground, grasses of various kinds flourish, among them timothy, orchard grass, blue-grass, as well as red and white clover, which are completely naturalized, and would doubtless furnish good feed for horses and cattle, although the

excessive dampness of the climate must render the curing of hay a serious problem.

As might be expected, the mild, moist climate is favorable to the growth of most of the lower plants. Ferns are abundant and in considerable variety, considering the high latitude. No exact list was made, but there are probably a dozen species about Sitka. *Pteris aquilina* is not so common as it is farther south, but several species of Asplenium and Aspidium were very abundant, and *Asplenium filix fœmima* was especially luxuriant, with fronds five or six feet high. On the rocks near the shore a Polypodium (*P. falcatum?*) was common, and in the woods, besides the ferns already mentioned, the common beech fern (Phegopteris) and the striking *Blechnum spicant* were abundant. Alaska is the only region in America, so far as I know, where the latter common European fern is found. The only other Pteridophytes noted were *Equisetium arvense* and *Lycopodium annotinum*, which was not, however, abundant.

Fungi abounded, but no special notes were made in regard to them. The most conspicuous parasitic one was an Exobasidium, probably *E. vaccinii*, which was very common on Menziesia, where it formed remarkable distortions both of the twigs and leaves, as well as the flowers. These gall-like growths, whether of the leaves or flowers, are usually quite destitute of chlorophyll, and of a pale pink color, with a delicate frosty bloom, caused by the spores of the fungus. The whole region promised a rich harvest to the mycologist.

Very little was done in the way of collecting fresh-water algæ, but material gathered in the bog pools showed many beautiful desmids and other interesting forms. The marine flora is exceptionally rich in the larger brown seaweeds, the Laminariaceæ being specially conspicuous and represented by many genera and species. The large kelps, like Nereocystis and Macrocystis, grow much higher up than they do farther south, and are correspondingly shorter. The tides are very marked at Sitka, and it was striking to see how near the high-tide mark many of the brown algæ grew. Fucus, especially, grew where it was covered by the tide for a very little while, remaining exposed for much the greater part of the time. The

moderate temperature of the air and the prevalence of cloudy skies no doubt favor this habit. These northern waters are especially rich in the gigantic kelps, so characteristic of the Pacific, and the masses of these big brown seaweeds attract the attention of the most careless observer.

After two weeks spent most pleasantly at Sitka, the steamer was taken for the return voyage. On the way back we put into Glacier Bay, where a morning was spent scrambling over the moraine of the great Muir glacier, which fills up the head of the bay, and whose sheer cliffs of glittering ice extend for more than a mile across it, and rise two or three hundred feet above its waters, gray with the detritus of the glacier, from which great blocks of ice are constantly falling to add to the fleet of icebergs sailing out from the bay into the ocean. For many miles back of the ice cliffs the rough surface of the glacier extended to the bases of the snow-capped peaks, which formed the impressive background of this magnificent picture. The face of the glacier presented a marvelous variety of color. In places the cliffs of ice were pure white, with faint blue veins looking like marble, while at other points crags of crystalline clearness glittered in the sunlight with all the tints of the rainbow. The crevasses were of the purest blue, ranging from faint turquoise tints to the deepest sapphire and indigo. Now and again a fragment would break off and fall with a thunderous crash into the bay, where its weight would carry it far below the surface, whence it presently emerged with a great splash like some huge monster, and presently started oceanward to join the rest of the iceberg fleet. Most of these floating ice masses were very free from dirty surface ice, and looked like huge blocks of blue-veined marble, or sometimes were solid masses of pure blue ice of the most exquisite shades.

The huge moraine flanking this glacier presented a most forbidding appearance, and very little vegetation has succeeded in gaining a foothold. Besides a dwarf prostrate willow, a few inches high, which was seen in several places, the only other plant noticed was an Epilobium, the finest of the genus that I have seen. The deep crimson flowers, twice the size of those of the common willow-herb, were magnificent and especially

striking, growing as they did by themselves in the stony wilderness of the moraine.

The return voyage is rather an anti-climax, as the scenery grows less impressive as we go southward. The last day of the voyage, however, afforded us one more impression to carry away. Going north, we had missed the fine view of Mt. Baker, off Victoria. This is the most northerly of the group of snow peaks to be seen from Puget Sound. As we approached Victoria late in the afternoon, we saw far away to the southeast the perfectly symmetrical cone, standing quite alone and reflecting the afternoon sunshine from its smooth slopes, and rising apparently directly from the sea. Two years before I had seen this mountain under similar conditions as we sailed out of Victoria, bound for Japan; and one who has seen the peak of Fuji Yama, on the other side of the Pacific, must be struck with the resemblance between the two mountains. As the light faded on the slopes of Baker we sailed into Victoria and our voyage was over.

As might be expected from its position, the flora of maritime Alaska combines characters both American and Asiatic. While many of the plants were the common sub-arctic types, some like *Pinus contorta* and *Tsuga mertensiana* are distinctly American; while, on the other hand, *Picea litchensis* is found on the northern Pacific coasts of both Asia and America, and a number of the herbaceous plants, *e.g.*, Lysichiton, Fritillaria, *Trientalis europæa*, *Blechnum spicant*, are probably all immigrants from Asia. The continuous chain of the Aleutian Islands connecting the two continents makes the presence of these Oriental immigrants readily understood.